DESCRIPTION OF ADULT AND NYMPHAL STAGES OF TWO NEW GALL PSYLLIDS (PSYLLIDAE: HOMOPTERA) FROM INDIA[1]

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(With four text - figures)

INTRODUCTION

During 1984-85 psyllids were collected in the forests of Siruvani and Thimbam and Yelagiri hills. Of these two species were found to be new to Science assignable to the genera *Arytaina* and *Trioza*. The adults as well as the nymphal stages of the two new species are described in detail.

KEY TO THE SPECIES OF *Arytaina* FOERSTER

1. Radius almost as long as cubital petiole .... *A. ramakrishni* Crawford
- Radius longer than cubital petiole 2

2. Genal cone small with apical setae slightly longer than vertex .....*A. spinosa* Mathur
- Genal cone long with apical setae smaller than vertex .....*A.marsupiae* sp. nov.

1. DESCRIPTION OF ADULTS

1. Arytaina marsupiae sp. nov. (Fig. 1)

Colour: General Colour light brown with ovoid black patches in the lateral margins of the prescutum, antenna blackish brown at the tip of the two segments, genitalia dark brown with highly serrated, forewings hyaline and transparent.

Head: Moderately deflexed, sparsely pubescent, vertex broader than long, about twice as broader as long, possessing dark brown band on the middle reaching the margins on either side, anterior ocellus visible from the above, genal cones long, smaller than the length of vertex, straight, widely placed, possessing two long characteristic setae at the tip of the genal conel, eyes small and hemisperical.

Antenna: Small, slender, longer than width of the head, ten - segmented, two basal segments robust, first broader than second, second as long as first, third longest, about twice as long as first, fifth as long as sixth and both of them shorter than fourth, seventh longer than eighth, ninth and tenth segment, terminal segment brown in colour bearing two unequal setae at the tip, sensoria present on segments fourth, sixth, eighth and ninth.

Leg: Robust, sparsely pubescent, femur serrate with minute setae arranged in lines, tibia shorter and slender than femur, femur with a basal spur and with three thick black spines at apex, in addition, a comb of six thin long setae present. apical tarsal segment broader with two claw like spines at its apex.

Wings: *Forewing*: Small, hyaline, transparent, ovoid, about three times as wide as long, round at apex, pterostigma long and narrow, veins thin, basal vein as long as cubitus and shorter than radius, cubital petiole shorter than radius, marginal cell unequal, first marginal cell small and narrower than second.

Hindwing: Small, transparent , membranous and coastal vein with small setae widely placed.

FEMALE: Genitalia smaller than abdomen, broader at the base, narrow and tapering at the apex, dorsal plate longer than ventral, with long and short setae on the surface, ventral plate broad at base narrow and short at apex, ovipositor short, pointed,

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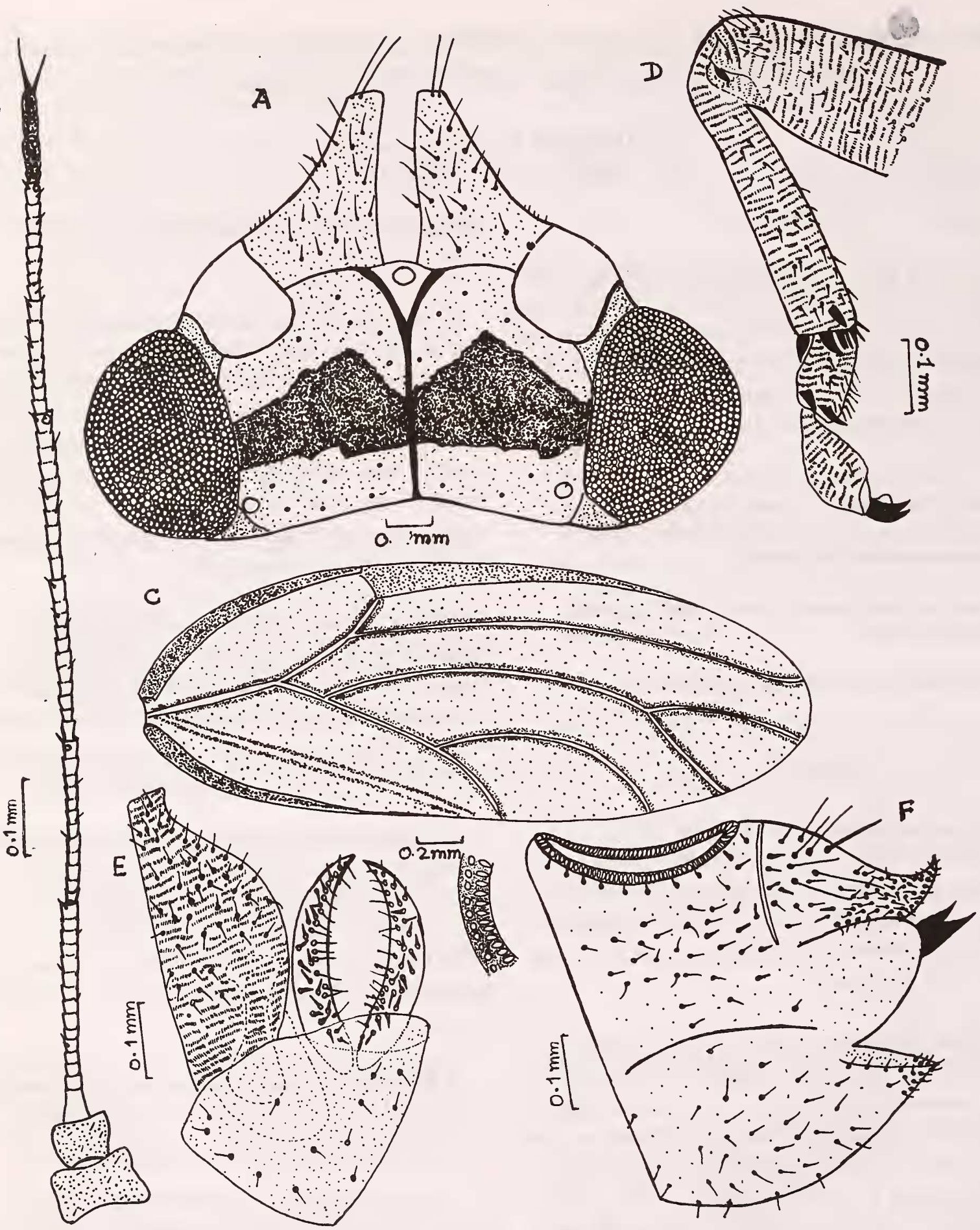

Fig.1. *Arytaina marsupiae* sp. nov.
A. Head; B. Antenna; C. Fore wing; D. Leg; E. Male genitalia; F. Female genitalia.

anal pore ring ovate, with two rows of pores, inner row longer than the outer.

MALE: Genitalia Smaller than abdomen, anal valve broader and longer than parameres, wide in the middle and narrow at apex, paramere with uniform smooth margin, ending with strong pointed tip, sparsely pubescent, hypandrium brown, triangular in shape, shorter than anal value, aedeagus short ending with spoon like structure.

Measurements (in mm) : FEMALE (MALE)		
Width of the head	:	0.850 - 0.860 (0.830)
Width of the vertex	:	0.500 - 0.520 (0.490)
Length of forewing	:	2.601 - 2.662 (2.295)
Length of antenna	:	1.438 - 1.499 (1.420)
Dorsal plate	:	0.460 - 0.500
Ventral Plate	:	0.350 - 0.360
Hypandrium	:	(0.260)
Analvalve	:	(0.340)
Paramere	:	(0.260)
Host plant	:	*Pterocarpus marsupium* Roxb. (Leguminoceae).
Locality	:	Siruvani forest, Coimbatore, Tamil Nadu (300 m.).
Types	:	Holotype female, allotype male mounted on slides, paratypes one male and two females.
Date of collection	:	August 4, 1984.
Collected by	:	K. Thenmozhi.

Remarks: *Arytaina marsupiae* sp. nov. is closely related to *A. spinosa* Mathur (Mathur 1975) in the shape of the forewing and the radius being longer than cubital petiol, but is distinct in having long characteristic genal cone with two long apical setae, shape of the anal valve and parameres.

In the Indian subcontinent five species are recorded under the genus *Arytaina*. None of the species are gall makers tough twisting and curling of the young leaf are reported due to feeding by *A. puntipennis* and *A. ramakrishni* (Mani 1973). The present finding of *A. marsupiae* sp.nov. is a first gall forming species under this genus and a new addition to the genus *Arytaina* in India.

2. DESCRIPTION OF THE THIRD TO FIFTH NYMPHAL STAGES (Fig. 2)

Fifth Instar Nymph: Body 2.081 mm long and 1.591 mm wide, head narrower than abdomen; prothorax fused with cephalic region and separated from meso-and metathorax by a membrane; wingpads large and projecting, eyes large and prominent; head plate large extending up to prothoracic region; thoracic plates small and well sclerotized apical region of abdomen fused to form a sclerotized caudal plate which is 0.612 mm long in the dorsal side of the abdomen; small sclerotic plates present in throracic region; antenna 0.796 mm long, robust, third segment longer than fourth, fifth and sixth; terminal segment longest bearing two apical spines at its apex, out of four sensoria two present on segments third and fifth and rest on segment seventh; wingpads well developed, forewing pad 0.623 mm long, twice as wide as long and slightly smaller than length of antenna, margins of forewing and hindwing with 32 and 3 simple setae respectively, hindwing with one lanceolate setae, both the wing pads beset with minute setae and with few simple setae; legs sparsely pubescent, tibia-tarsus articulation well demarcated, tarsus and with two claw like spines, pulvilus small and petiolate; abdomen 1.010 mm long and 1.049 mm wide bearing sclerotized area (anal plate) surrounding the circum anal pore ring, four pairs of well sclerotized plates present surrounding the spiracle near lateral margin of abdomen; margin of abdomen surrounded by simple setae and lanceolate setae in the ratio of 9: 3, circum anal pore ring 0.290 mm wide; more or less bean shaped, placed at the extreme posterior margin of abdomen, consisting of double rings; outer ring with single row of slit like

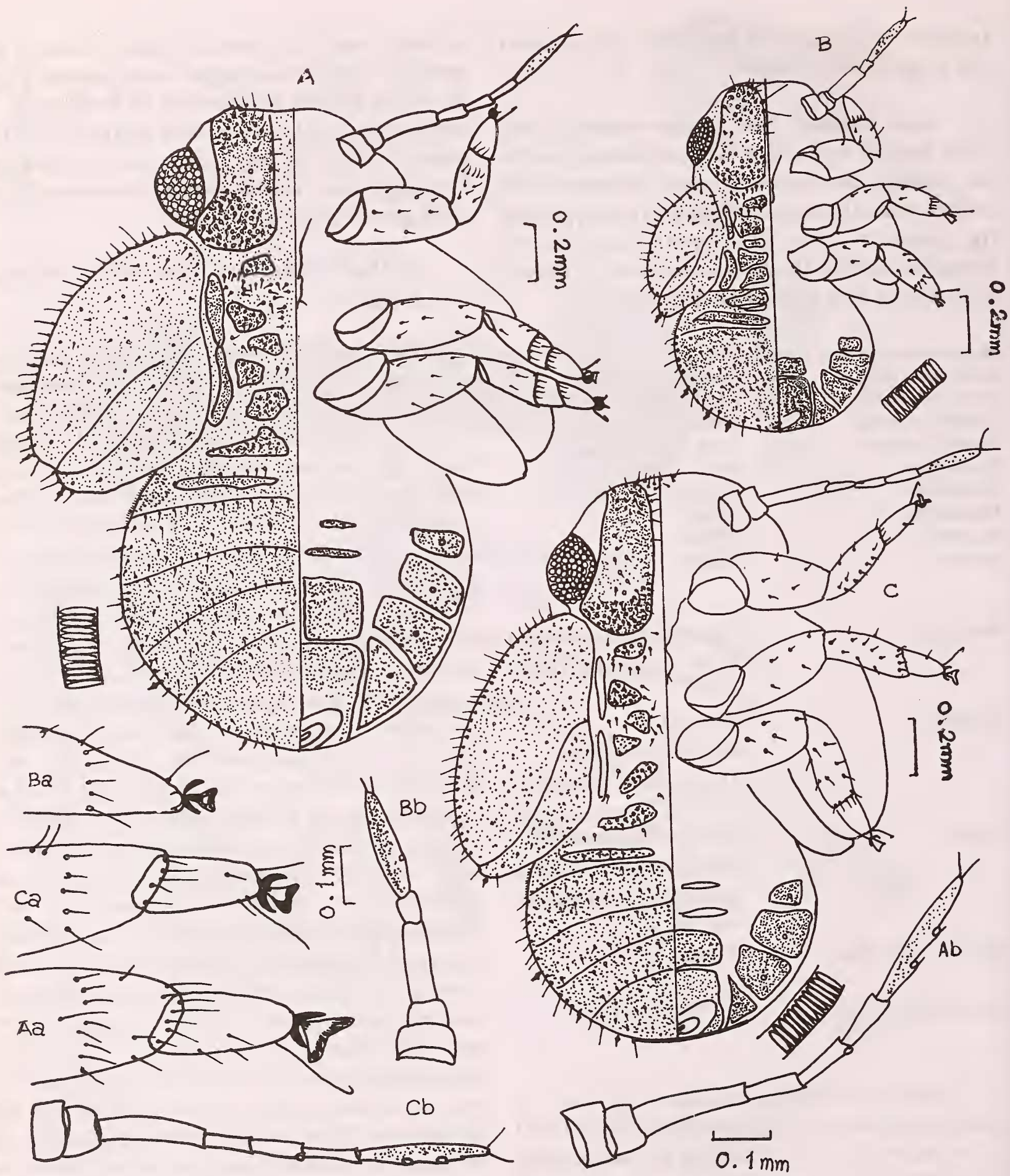

Fig.2. *Arytaina marsupiae* sp. nov.
A. Fifth instar nymph: Aa. Leg; Ab. Antenna. B. Third instar nymph: Ba. Leg; Bb. Antenna. C. Fourth inster nymph: Ca. Leg; Cb. Antenna.

pores and inner ring with minute pores.

Fourth Instar nymph: Body 1.683 mm long and 1.377 mm wide; antenna 0.734 mm long, seven segmented with two sensoria on segments third and fourth and two sensoria on seventh segment; forewing pad 0.673 mm long and nearly two times as long as wide; tibia tarsus articulation is not well defined; tarsus end with two claw like spines; abdomen 0.826 mm long and 0.949 mm wide, caudal plate nearly twice as wide as length of abdomen, circum anal pore wing 0.269 mm wide and bean shaped.

Third instar nymph: Body 1.080 mm long and 0.880 mm wide; antenna 0.430 mm long, twice as long as width of head; five segmented, first two segments robust, as long as each other; terminal longest bearing two sensoria and two apical spines of equal length, one sensoria on third segment; wingpad demarcated, 0.410 mm long and 0.180 mm wide, twice as wide as long; margins surrounded by number of simple setae in the ratio of 2:1; abdomen 0.500 mm long and 0.670 mm wide; caudal plate 0.380 mm long, nearly twice as long as the width of the abdomen; circum anal pore wing 0.200 mm wide, surrounding the anal opening.

KEY TO THE SPECIES OF *Trioza* FOERSTER

1. Head sub horizontal, genal cone long
.....*Trioza longiantennata* Mathur

- Head deflexed genal cone small 2

2. Genal cone very small sparsely pubescent, divergent and bluntly round at apex .....*T. bifurgata* Mathur

- Deeply deflexed downward genal cone, almost triangular, broadly rounded at apex..... *T. yelagiriensis* sp. nov.

3. DESCRIPTION OF ADULTS

2. **Trioza yelagiriensis** sp. nov. (Fig. 3)

Colour: General colour dark brown, antenna light brown of the segment first to eighth, ninth and tenth segment dark brown, wings hyaline, transparent, veins brown, legs light brown, abdomen dark brown in colour.

Head: Head including eyes smaller than thorax, moderately pubescent, vertex serrate, wider than long, with two foval impressions near posterior margin, both the corners of anterior margin projected forward, anterior ocellus not clearly visible from above, deeply deflexed downward, divergent, serrate, eyes large and hemispherical.

Antenna : Antenna long, slender, 1.030 mm long, first segment longest, fourth longer than rest of other segments, fifth smaller than sixth, seventh as long as eighth, last two segments small and slightly wider, terminal segment bearing two setae almost in equal length, sensoria present on segments fourth, sixth, eighth and ninth.

Leg: Leg long, pubescent, femur, tibia and tarsus beset with minute points, femur smaller than tibia, tibia with subapical setae, three spine like tooth and comb of long thick setae at its apex, apical tarsus longer than basal tarsus with two claw like spines.

Wings: *Fore wing:* Long and ovate, angled at apex, thrice as wide as long, basal vein longer than radius and cubitus, medium almost twice as long as cubitus, radial sector short and curved to casts; first marginal cell longer and wider than second marginal cell, veins with minute setae, wings hyaline.

Hindwing: Transparent, hyaline with row of setae at apex of costal region.

FEMALE : Genitalia smaller than abdomen, pubescent, ventral plate longer than dorsal plate, dorsal plate broad basaly and narrow apicaly, 500 μ long, tip of the dorsal and ventral plate with bunch of thick setae, circum anal pore ring placed on dorsal plate consisting of two rows of pores, inner row with elongated with elongated and outer with short round pores, ovipositor short.

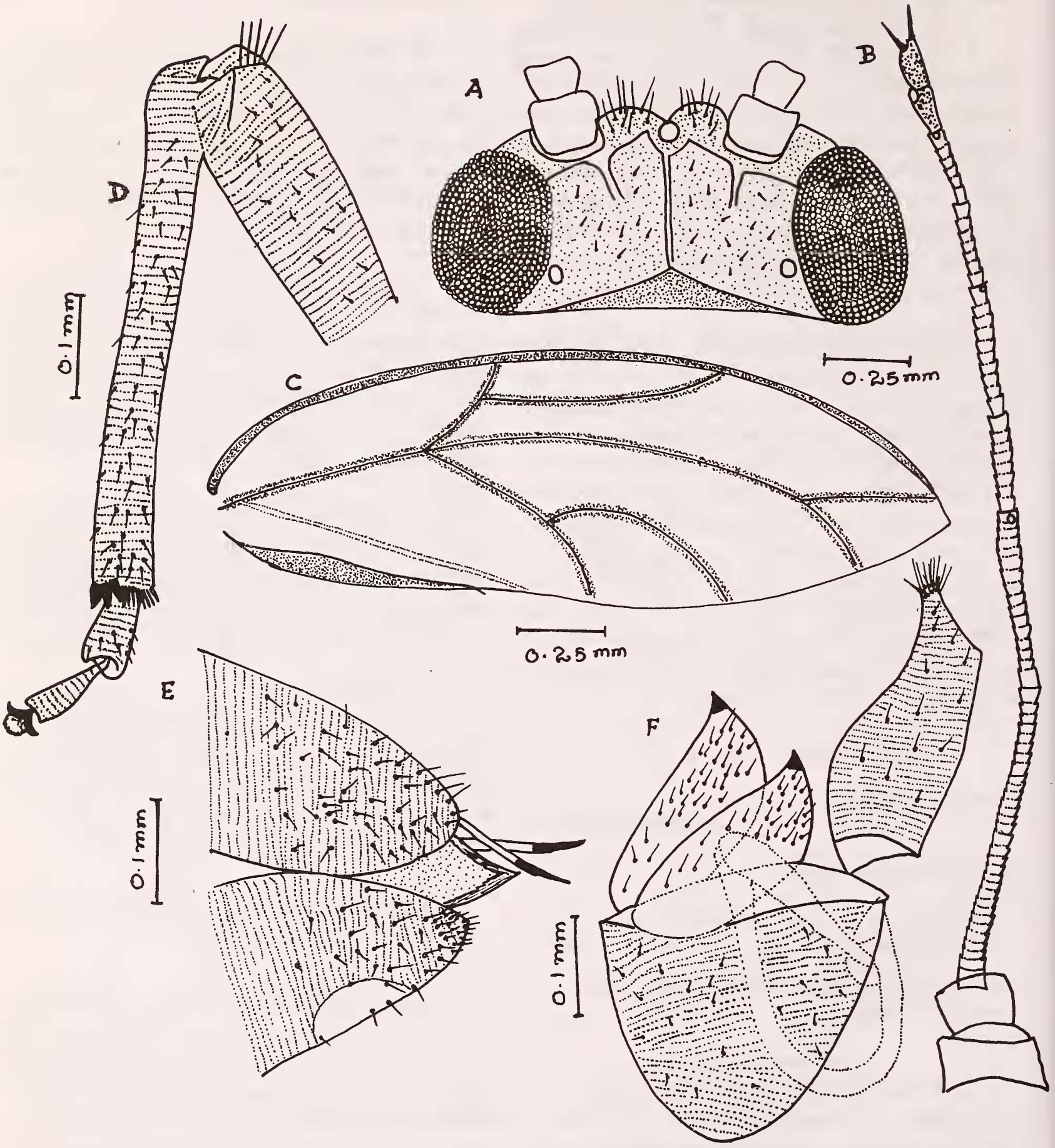

Fig.3. *Trioza yelagiriensis* sp. nov.
A. Head; B. Antenna; C. Fore wing: D. leg; E. Female genitalia; F. Male genitalia.

MALE: Genitalia smaller than abdomen, pubescent, hypandrium triangular, paramears longer than anal valve, with thick apex, apex of the anal valve with row of long setae, aedeagus 250 u long and end with spoon like structure.

Measurements (in mm) : FEMALE (MALE)

Body length	:	3.250 (2.968)
Width of head	:	0.620 (0.600)
Width of vertex	:	0.320 (0.300)
Length of forewing	:	3.304 (2.998)
Length of femur	:	0.500 (0.500)
Length of tibia	:	0.800 (0.800)
Dorsal Plate	:	0.600
Ventral plate	:	0.380
Hypandrium	:	(0.220)
Analvalve	:	(0.250)
Paramer	:	(0.260)
Aedeagus	:	(0.250)
Length of antenna	:	1.050 (1.030)

Host plant : *Ficus bengalensis* Linn. (Moraceae)

Locality : Yelagiri hills, North Arcot, Tamil Nadu (1600 m).

Type : Holotype female, allotype male mounted on slides, paratypes one female and one male.

Date of collection : May 25, 1985.

Collected by : K. Thenmozhi.

Remarks: *Trioza yelagiriensis* sp. nov. is closely related to *Trioza bifurcata* Mathur (Mathur 1975) in having short radial sector curved to costa, more than one mm long antenna, hind tibia with a strong and conspicuous apical spur, but is distinguished from *T. bifurcata* in having almost triangular broadly rounded at its apex and deeply deflexed downward genal cone, hind tibia without apical black tooth. Out of 29 species reported under the genus *Trioza* in India, 19 are gall formers. The present report on *T.yelagiriensis* sp. nov. adds to the list of gall forming species. This is the first time a gall maker from the genus *Trioza* is reported on *Ficus bengalensis* (Moraceae).

4. DESCRIPTION OF THIRD TO FIFTH NYMPHAL INSTARS

Fifth instar nymph: Body elongate, oval 2. 601 mm long, head and prothorax completely fused and prothorax separated by a membrane from meso - and metathorax; meso- and metathorax well demarcated; head 0.750 mm long, 54 number secta setae surrounding margin of head, antenna 0.270 mm long, nearly three times shorter than the width of head, six segmented, four sensoria present in the segment third, fourth, fifth and sixth; wing pad well developed, triozine form, fore wing and hind wingpad well demarcated, fore wingpad 1.150 mm long and 0.370 mm wide and each of margin surrounded by 122 number of secta setae and hind wingpad margin by 18 number of secta setae; leg 0.970 mm long, tibia tarsus articulation well defined, abdomen 1.220 mm long, margin of the abdomen surrounding 130 number of setae, circum anal pore ring placed ventral side of the abdomen consisting of double ring of pores.

Fourth instar nymph: Body 1.560 mm long and 1.120 mm wide, identical to that of fifth instar except in the size and number of setae present in the margin of body; head 0.720 mm wide, antenna 0.160 mm long five segmented with three sensoria present in the segment third, fourth and fifth; legs robust and stout; wingpad well developed; abdomen 0.920 mm wide, weakly sclerotized on the dorsal side, ventral side membranous, circum anal pore ring placed on the ventral side of abdomen, the margin of head, wingpads and abdomen surrounding 42, 103 and 120 number of secta setae.

Third instar nymph: Body oval shaped, 0.520

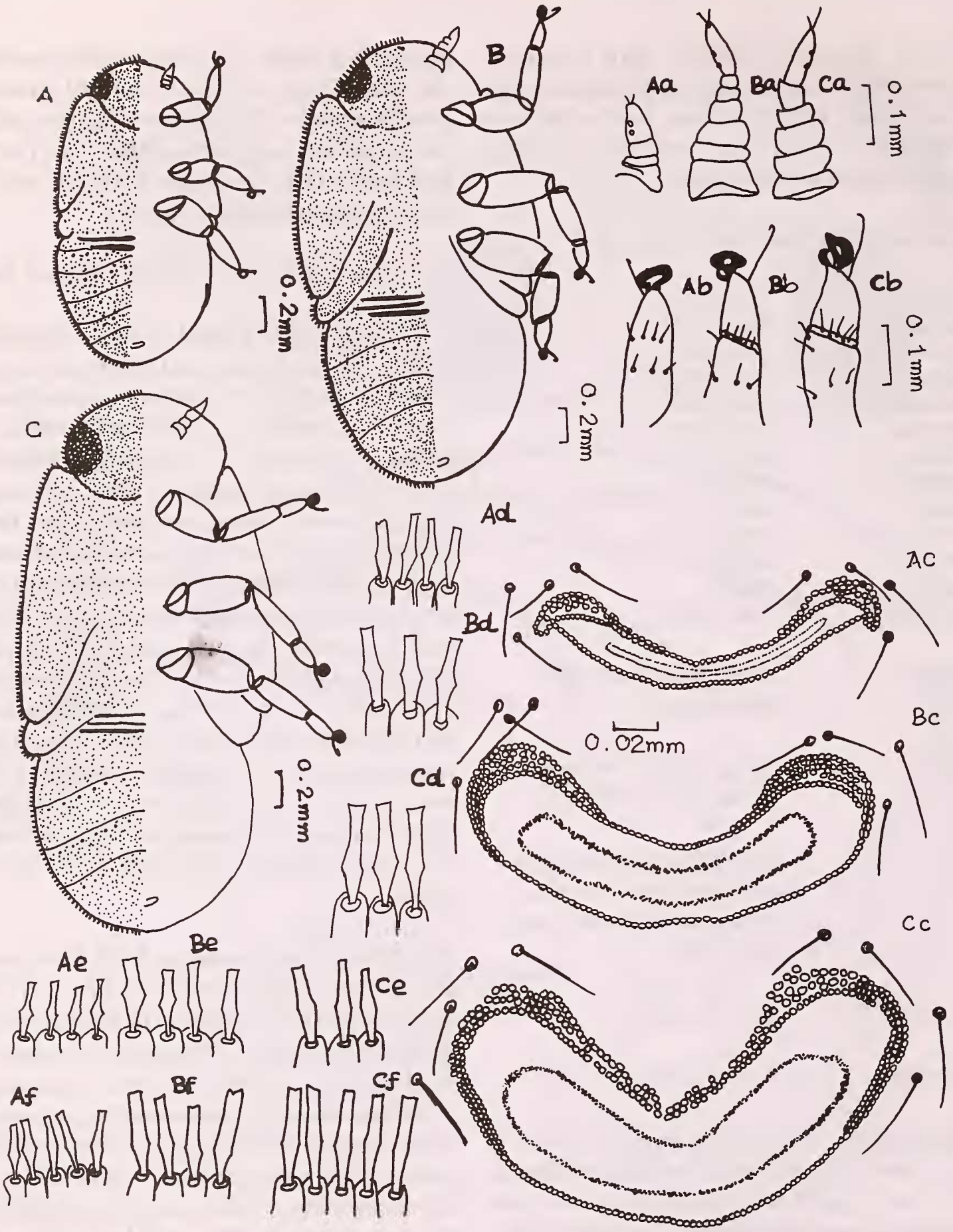

Fig. 4. *Trioza yelagiriensis* sp.nov.

A. Third inster nymph: Aa. antenna; Ab. leg; Ac. anal pore ring; Ad. marginal secta setae of abdomen; Ae. marginal secta setae of head; Af. marginal secta setae of thorax. B. Fourth instar nymph: Ba. antenna; Bb. leg; Bc. anal pore ring; Bd. marginal secta setae of abdomen; Be. marginal secta setae of head; Bf. marginal secta setae of thorax. C. Fifth instar nymph: Ca. antenna; Cb. leg; Cc. anal pore ring; Cd. marginal secta setae of abdomen; Ce. marginal secta setae of head; Cf. marginal secta setae of thorax:

mm long and 0.829 mm wide, head 0.520 mm long, wider than the length of antenna (0.150 mm) the margin surrounded by a row of 36 number of secta setae, antenna two segmented, triangular shaped, placed ventrally, two sensoria in segment second and third; wingpad not well developed, anterior wingpad 0.570 mm long, margin of fore wing and hind wingpad surrounding 60:14 number of secta setae: abdomen 0.765 mm wide with 77 number of secta setae surrounding the margin, circum anal pore ring placed on central side of abdomen consisting of double ring of pores.

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